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Cecal diverticulitis mimicking acute appendicitis: Management and short-term results of surgery

Management of cecal diverticulitis

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Abstract

Aim: Cecal diverticulum is an infrequent cause of acute abdomen, and cecal diverticulitis usually presents in a behavior similar to acute appendicitis. This study aims to review our experience with surgical or nonsurgical management of cecal diverticulitis mimicking acute appendicitis in our department. Material and Method: From January 2012 to April 2017, fourteen patients were treated for cecal diverticulitis at our clinic. We retrospectively reviewed the patients' records, imaging modalities, and operative findings.Results: Nine men and five women with a mean age 43.93 ± 8.95 (range 32 to 65) years were evaluated. Total of nine (64.2%) patients were managed operatively. All patients were urgently operated. The mean hospital stay was 6.11 ± 1.61 days. In the postoperative period, two patients had wound infection, and postoperative mortality was not observed. Nonoperative management was used for the treatment in five (35.7%) patients who were preoperatively diagnosed with cecal diverticulitis, Hinchey stage I or II.Conclusion: Inflammation of the diverticulum of the cecum is an uncommon disease, but should be kept in mind in the differential diagnosis of pain in the right lower quadrant. Diagnostic laparoscopy can be used in patients and especially in women with atypical presentations of acute appendicitis. Preoperative diagnosis of cecal diverticulitis is very important in order to decide how to manage this condition.

Keywords

Cecum Diverticulitis; Management; Mimicking Acute Appendicitis

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Introduction

As a rare clinical entity, the cecal diverticulitis has no certain etiology. The incidence of right colonic diverticula in published studies is low in Western countries (1.5 %), but the incidence rate is substantially higher (55–70 %) in Asian countries [1,2]. A cecal diverticulum is an infrequent cause of acute abdomen, and cecal diverticulitis usually presents in a behavior similar to acute appendicitis [3]. It is extremely difficult to differentiate its preoperative from acute appendicitis, and this kind of distinction is usually made in the operating room [4]. This study aims to review our experience with surgical or nonsurgical management of cecal diverticulitis mimicking acute appendicitis in our department.

Material and Method

From January 2012 to April 2017, fourteen patients were treated for cecal diverticulitis at the General Surgery Department of the Health Sciences University Mehmet Akif İnan Training and Research Hospital. Specific data extracted included presenting complaints and physical signs, preoperative diagnosis, laboratory and radiographic findings, length of symptoms before treatment, indications for operative intervention, surgical treatments, and morbidity and mortality. The severity of diverticulitis was assessed using the modified Hinchey's classification [5-6]. Data were evaluated with the statistical SPSS package, version 13.0 (Chicago, IL). Data were expressed as mean ± standard deviation (SD) or median (range).

Results

Nine men and five women with a mean age 43.93 ± 8.95 (range 32 to 65) years were evaluated. Demographic and clinical features are shown in Table 1. All patients were admitted to our emergency surgery unit with the complaints of pain in the right lower quadrant of the abdomen, distension, and fever. The clinical presentation of cecal diverticulitis was similar to acute appendicitis. The acute abdominal pain was present in all patients, with an average duration of 2.62± 1.68 days (range 1 to 6 days). Nausea or vomiting occurred in only five (35.7%) patients for an average of 2.1 days (range 1 to 5 days). Right lower quadrant tenderness was the most common physical symptom, found in eleven (78.5%) patients, and this was accompanied by a palpable mass in only three (21.4 %) patients. A low-grade fever of 39.7 °C was often present, along with mild leukocytosis (14.700 WBC). Radiologic studies were performed in patients: plain abdominal x-rays in eight (57.1 %), plain abdominal X-rays revealed no abnormality, computed tomography (CT) scan in eight (57.1 %), and abdominal ultrasound (US) in five (35.7%). A correct radiologic diagnosis was possible in only five patients; all confirmed on CT scan. Depending on these correct radiologic diagnoses, five (35.7 %) patients were managed nonoperatively.

Total of nine (64.2%) patients were managed operatively (Table 2). Emergency surgery was performed for preoperative diagnosis of appendicitis in seven (%50) of the fourteen patients with cecal diverticulitis. In five of this seven patients; the appendix was found in the normal location with a normal appearance, and an inflamed mass was found on the lateral wall of the cecum. Incidental appendectomy and drainage were performed in this patients. In two of this seven patients; the appendix was found in the normal location with a normal appearance, and an inflamed mass was found on the anterior wall of the cecum located between the tenia liberal and plica ileo-cecalis with a paracolic abscess. A diverticulectomy and incidental appendectomy were performed.The other two (14.2 %) of nine patients, the indication for emergency surgery was acute abdomen from a correctable surgical etiology. In these patients, the cecal wall near to the diverticulum were thickened and abnormal, raising the suspicion of underlying carcinoma. Right hemicolectomy with appropriate cancer clearing lymphadenectomy was then performed in these two patients. Histopathology of the resected right colon showed that the lesion was a solitary cecal diverticulum. There were histological features of acute inflammation and gangrene, but no evidence of malignancy. Oral intake of foods was started on a postoperative day three if there was no abdominal pain and blumia. All patients were urgently operated. The mean hospital stay was 6.11 ± 1.61 days. In the postoperative period, two patients had wound infection, and postoperative mortality was not observed. Nonoperative management

Table 1. Demographic and clinical features of the patients

Age (mean±SD)	43.93 ± 8.95
Gender	
Male	5 (35.8%)
Female	9 (64.2%)
Type of treatment	
Operative	9 (64.3%)
Nonoperative	5 (35.7%)
Type of the operation	9 (64.3%)
Appendectomy and drainage	5 (35.7%)
Appendectomy and diverticulectomy	2 (14.3%)
Right hemicolectomy and lymphadenectomy	2 (14.3%)
Operation time, minute (mean±SD)	83.589 ± 27.81
Blood loss (ml) (mean±SD)	63.89 ± 47.94
Length of hospital stay, days (mean±SD)	6.11 ± 1.61
Type of the cecal diverticulitis	14 (100%)
Hinchey Ia	4 (28.6%)
Hinchey Ib	6 (42.8%)
Hinchey II	4 (28.6%)

Table 2. Demographic and clinical features of the patients which treated operatively

No	Age	Gender	Modified Hinchey's Classification	Operation Type	Blood loss (ml)	Operation time (minute)	Length of hospital stay (days)	Postop complication
1	48	Male	Ib	A+D	150	120	6	None
2	51	Male	Ib	A+D	50	85	8	None
3	65	Female	II	RH+ L	100	90	9	Wound infection
4	34	Female	II	D+A	50	95	4	None
5	37	Male	Ib	A+D	120	125	5	None
6	51	Female	Ib	A+D	40	80	6	None
7	42	Male	Ia	A+D	30	50	7	None
8	47	Male	II	RH+ L	10	65	5	Wound infection
9	51	Female	II	D+A	25	45	6	None

Appendectomy and drainage= A+D; Diverticulectomy and appendectomy= D+A; Right hemicolectomy and lymphadenectomy= RH+ L.

was used for the treatment in five (35.7%) patients which was preoperatively diagnosed cecal diverticulitis, Hinchey stage I or II. Nonoperative management of these patients included broad-spectrum antibiotics or percutaneous drainage (PCD) in patients with a paracolic abscess. (PCD was only used for one patient because of forming of a right paracolic abscess.) The patients received a combination therapy of second-generation cephalosporin and metronidazole while hospitalized, and they received oral antibiotics for seven days after discharge. Oral intake of foods was started if there was no abdominal pain and blumia.

Discussion

Most patients with inflammation of a solitary diverticulum of the cecum present with abdominal pain and fever that is indistinguishable from acute appendicitis. It accounts for 3,6% of all colonic diverticula with median age incidence of 44 years and male to female ratio is 3:2 [7]. In our study, median age was 42 and male to female ratio was approximately 1,8. Moreover, half of the diverticula seem to be lying anterior to the cecal wall [8]. Cecal diverticula's can stay asymptomatic for years. They only produce symptoms in the presence of complications like inflammation or perforation. The most frequent clinical symptom of cecal diverticulitis includes abdominal pain in the right lower quadrant, fever, and leukocytosis. With these symptoms, a differential diagnosis should be established not only with acute appendicitis, but also with other conditions such as urinary infection, renal-ureteral colic, gastroenteritis, pelvic inflammatory disease, or inflammatory bowel disease [9,10]. The role of laboratory analysis in making the definitive diagnosis is limited, since that delivers no significant result other than moderate degree leukocytosis. The clinical and the laboratory findings of our cases carry similarity to acute appendicitis.

Radiologic tests prove the most beneficial methods for accurate diagnosis in the preoperative period. The imaging modalities most commonly used to diagnose acute diverticular disease are ultrasound, computed tomography, and magnetic resonance imaging. Water-soluble contrast or barium enema, although effective, have fallen out of favor due to the possible complications of contrast-induced bowel perforation and chemical peritonitis, which have been well documented in the literature [11-13].

Although plain x-rays and the abdominal US yield nonspecific findings, for the most part, CT is reasonably useful in the diagnosis [10]. Cecal diverticulum appears as a hypoechoic pouching, which originated from a broadened segment colonic wall in the US. CT imaging can be used in the diagnosis of acute appendicitis and cecal diverticulum. Thinning of the colonic wall, infiltration of the pericolic fatty, formation of the abscess and presence of extraluminal air might be observed in abdominal CT, which may also be evident in plastron appendicitis, though [10].

The preoperative diagnosis of cecal diverticulitis is difficult. A previous study reports it is only made in 9% of the cases, and most of these patients have had previous appendectomy [14]. The definitive diagnosis of cecal diverticulitis is most commonly justified intra-operatively during exploration for suspected appendicitis [15]. We had already suspected acute appendicitis in our seven cases with no history of prior appendectomy based on the evaluation of nonspecific findings from the US together with the clinical findings and laboratory analysis, yet the definitive diagnosis was only established intraoperatively. The management to be applied is subject to change on the basis of intraoperative findings. When an uncomplicated cecal diverticulitis diagnosis is made before the operation, management should be done conservatively with intravenous antibiotics [16]. However, the majority of the cases are treated surgically because of difficulty distinguishing it from acute appendicitis or excluding a cecal carcinoma. In our study, nine patients were treated surgically, and only five patients were treated non-operatively. Different surgical approaches are defined but a right hemicolectomy is recommended in the presence of an inflammatory mass and when a carcinoma cannot be excluded [17,18]. Moreover, if surgery is needed, elective laparoscopic surgery is preferred to minimize complications and morbidity [19,20].

Conclusion

Inflammation of the diverticulum of the cecum is an uncommon disease but should be kept in mind in the differential diagnosis of pain in the right lower quadrant. The definitive diagnosis can not always be made despite the evaluation of the clinical condition, laboratory findings, and imaging methods. Its diagnosis should especially be suspected in patients with a long history of pain with atypical presentations of acute appendicitis. Diagnostic laparoscopy can be used in patients and especially in women with atypical presentations of acute appendicitis. During the surgical procedure, if the diagnosis of acute appendicitis is in doubt, further exploration should be carried out. Preoperative diagnosis of cecal diverticulitis is very important in order to decide how to manage this condition.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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